

REMARKS

The above amendment with the following remarks is submitted to be fully responsive to the Office Action of June 15, 2006. Reconsideration of this application in light of the amendment and the allowance of this application are respectfully requested.

Claims 1-29 were pending in the present application prior to the above amendment. In response to the Office Action, claims 1, 2, and 11-13 have been amended. Therefore, claims 1-29 are still pending in the present application, and are believed to be in proper condition for allowance.

Referring now to the Office Action, Page 4, lines 12-13 of the Specification was objected to due to a typographical error in the formula that defines "q + s". In response thereto, this portion of the Specification has been corrected above to properly state "q and s are independently 0 or an integer such that $1 \leq q + s \leq 400$ ". Thus, acceptance of the Specification is respectfully requested. In addition, claims 1 and 19 were objected to for the same reason. In response, claims 1 and 19 have been amended above to properly recite that $1 \leq q + s \leq 400$. Thus, the acceptance of these amended claims is respectfully requested.

Referring again to the Office Action, claims 1-29 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. The Examiner notes that on one hand, the specified formula states that each Si atom is associated with a group Z_b and that b can be zero, but on the other hand, that the siloxane contains at least one group Z. The Examiner thus essentially states that these limitations are inconsistent. The Applicant's respectfully disagree and believe that the Examiner is misconstruing the claim language that clearly recites "additive comprises an organo-modified siloxane comprising units of the formula" set forth. (*Emphasis added*).

Siloxanes are based upon repeating $-\text{[Si-O]}-$ units. In the siloxane used in the invention, each of these units may be same or different, but as recited in claim 1, includes some units having the formula $[\text{R}_a^1\text{Z}_b\text{SiO}_{(4-a-b)/2}]$, the siloxane comprising "n"

of these units ("n" being an integer greater than 1). The parameters "a" and "b" specify the number of R¹ and Z groups which may be bonded to each Si atom in the siloxane. Thus, each Si atom may have 0, 1, 2 or 3, R¹ or Z groups bonded to it, while meeting the valency requirements of Si. The remaining substituent(s) on each Si atom comprise O atoms, and because the valency of Si is 4 the number of O atoms required to complete this valency is (4-a-b)/2 (each O atom is shared between two Si atoms, hence the division by 2). Thus, the parameters "a" and "b" are specific to each Si atom in the siloxane, the only proviso being that at least one of the organo-groups Z must be present in the siloxane, not necessarily with respect to each Si atom. The organo-groups Z are the groups which provide the functionality of the siloxane. If no Z group was present, then the siloxane would merely be a standard non-functional siloxane. Thus, the claims require that the organo-modified siloxane contains at least one group Z, so that at least one Si atom in the siloxane is bonded to a Z group.

By way of example, "Siloxane 1" used in the Examples presented in the Specification is a hydroxyl-endcapped polydimethylsiloxane in which approximately 11 mole % of the Si atoms are substituted by Z groups. Thus, approximately 11 mole % of the Si atoms in Siloxane 1 form units having the formula -SiR¹ZO- (i.e. "a" = 1 and "b" = 1), with the remaining Si atoms forming units having the formula -SiR¹₂O- (i.e. "a" = 2 and "b" = 0), the Si atoms at the ends of the siloxane chain forming units SiR¹₃O- (i.e. "a" = 3, "b" = 0, one R¹ group being an HO-group to provide the hydroxyl end-capping).

Regarding the Examiner's rejection of claims 2 and 11, and claims 12 and 13 under 35 U.S.C. 112, the Applicants note that these parameters are defined in claim 1. In addition, these claims have been amended above to delete the article "a" to remove any double inclusion and to enhance the clarity of these claims. Thus, it is believed that claims 1-29 particular point out and distinctly claim the subject matter of the invention, and the withdrawal of this rejection is respectfully requested.

Referring again to the Office Action, claims 1-13, 15, 16, 18, 22-25 and 27-29 were rejected under 35 U.S.C. 103, based on over Mollett et al. (U.S. 4,919,754) in

view of Inada et al. (U.S. 6,136,766). The Applicants respectfully disagree for the following reasons. Firstly, the '754 reference requires a resin precursor, cross linker and catalyst for the removal of ink, and which may have a dispersant present. In making this rejection, the Examiner suggests that it would be obvious to start from '754, and to combine the teachings of the '754 reference with the teachings of '766 in order to find out which dispersant should be used. However, a person skilled in the art who is confronted with the problem being addressed by the present invention would never start from the '754 patent for the very reason that it teaches the use of a precursor of a resin, a cross-linking agent, and a catalyst, which are undesirable in a deinking process as explained below.

The '754 reference (and related U.S. 5,073,234, referred to below) describes a system based on a curable (reactive) precursor having at least two reactive functional groups per molecule, a curing catalyst, and a reactive cross-linking agent capable of reacting with the functional groups of the precursor. The precursor has hydroxy (-OH) functional groups, and the cross-linking polymer, hydro (-H) functional groups. Also, a dispersant is needed for the precursor, in addition to a diluent which is pure polydimethylsiloxane (silicone oil). Thus, the technique described in the '754 patent requires a complex reaction system in which the hydro-functional siloxane will inevitably react with at least some of the hydroxyl-functions of the cellulosic fibers. This is undesirable in a deinking process due to the diversified subsequent use of the recovered, deinked fibers.

In contrast, the method of the present invention uses a single, non-reactive, siloxane which is soluble in water, so that the siloxane does not react with, or deteriorate, the fibers. The technology described in '754 is, in fact, similar to that used for siliconization of paper, giving release properties to the finished paper fibers, and creates uncertainty as to the printing properties of paper made from recycled fibers recovered using this technology. Also, the '754 technology uses organo-tin compounds which are environmentally undesirable, and are banned in some

applications, which clearly runs contrary to the intention of the invention as providing a process for use in environmentally friendly paper recycling.

Secondly, the '766 reference relates to cleaning compositions (see the classifications applied to this patent), and is clearly not an analogous reference. The purpose of the cleaning composition disclosed is to ensure penetration of the active materials into oil stains (see column 1, line 20), to ensure dewatering (column 1, line 23) and to provide alternatives to organic solvents (column 1, lines 42-51). The cited '766 reference does not relate to deinking compositions or processes at all. The Examiner fails to establish any tenable motivation or teachings as to why a person of ordinary skill in the art of deinking would refer to the '766 reference.

In the above regard, the Examiner states that these references are analogous "as pertaining to stabilized aqueous emulsions of polydiorganosiloxane and a polyoxalkylene-substituted polyorganosiloxane." However, it is noted that such narrow construction of what constitutes analogous art is not proper. The present invention relates to deinking printed paper, not to "stabilized aqueous emulsions of polydiorganosiloxane and a polyoxalkylene-substituted polyorganosiloxane." Moreover, it is noted that the present invention is not concerned with stabilization, because the siloxane used in accordance with the present invention is easily compatible with the deinking process in aqueous form.

The Examiner is respectfully reminded that in order to properly rely on a reference as a basis for rejection of an applicant's invention, "the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." MPEP 2141.01(a) citing *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). In addition, a reference is "reasonably pertinent if . . . it is one which . . . logically would have commended itself to an inventor's attention in considering his problem." *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992). Clearly, the cited '766 reference fails to be in the field of the applicant's endeavor, and is not reasonably pertinent to the problems being addressed by the present invention.

Nonetheless, even if '766 was considered to be an analogous reference (which it clearly is not), a person skilled in the deinking art would not be motivated to combine this reference with the composition of the '754 reference in the manner suggested by the Examiner in the Office Action. In particular, the '766 patent uses low molecular weight polyorganosiloxanes which are linear (column 2, line 66) or cyclic (column 3, line 12) having, at most 7 siloxane units, and which are not compatible with water. Thus, if one of ordinary skill starts with the composition of the '754 reference, the siloxane used is a resin precursor (which is a reactive material), and is used in the presence of a cross-linking agent, preferably a catalyst. Such materials are described in '754 as materials having a mean molecular weight of 5000 to 70,000 (column 3, lines 15-17), which is equivalent to a minimum of at least 65 units up to about 1000 siloxane units. It would, therefore, not be appropriate or obvious to look at materials such as that disclosed in '766 which are aimed at dispersing very simple, small, non-reactive silicone materials, in order to find a material which can disperse the complex, large and reactive materials that are disclosed in the '754 patent.

In addition, the material used in the '766 reference is described as being an antifoaming agent (column 4, line 35). This would turn the person skilled in the art away from such materials for use in a deinking process where flotation, and hence foam formation, is important as in the method of the present invention. In short, the person skilled in the art would not start from '754, would not look at '766 to find a solution to the problem being addressed, and even if he were to look at '766, the '766 actually teaches away from what he is looking for and seeking to accomplish. Therefore, the Applicants respectfully contend that the Examiner's rejection of claims 1-13, 15, 16, 18, 22-25 and 27-29 is improper and that the Examiner has failed to properly establish a *prima facie* case of obviousness. Correspondingly, the withdrawal thereof, and the allowance of these claims, are respectfully requested.

Referring again to the Office Action, the Examiner rejected claims 14, 17, 19 and 26 under 35 U.S.C. 103 over Mollett ('754) in view of Inada ('766) references, and

in further view of Richmann et al. (5,248,388). The Applicants again respectfully disagree. Initially, these claims are believed to be allowable at least for the reason of their ultimate dependency on allowable claim 1 discussed above. In this regard, the above remarks relative to the '754 and '766 references are believed to be equally applicable with respect to this rejection, and the Applicants again contend that the '766 reference is improperly relied upon, and that '766 actually teaches away from the present invention.

In addition, whereas the '388 reference discloses a deinking system which uses surfactants, it is noted that the '388 reference does not disclose deinking by floatation, per the present invention, but in contrast appears to disclose a washing process. Thus, one of ordinary skill in the art would not be motivated to combine these references in the manner suggested by the Examiner. Moreover, the reference fails to disclose, teach, or otherwise suggest any details of potential siloxane-based oxyalkylene materials, except for dimethylpolysiloxane ethoxylates as one category and dimethylpolysiloxane propoxylates as another (column 4, line 42). Thus, even if '754 and '388 are combined, there is no disclosure or teaching in such combination about the specific organo-modified siloxanes recited in these claims. Furthermore, the Applicants again contend that the Examiner's assertion that '754, '766, and '388 references are analogous as pertaining to stabilized aqueous emulsions containing polyoxyalkylene substituted polyorganosiloxanes is clearly improper as previously discussed.

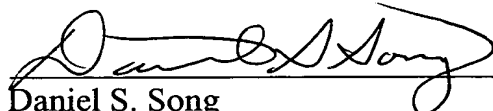
Referring again to the Office Action, the Examiner rejected claims 20 and 21 under 35 U.S.C. 103 over Mollett ('754) in view of Inada ('766) and Richmann et al. ('388) and in further view of Cutts et al. (U.S. 6,248,207). Thus, the Examiner is combining four different prior art documents to allegedly obviously arrive at the present invention. Initially, these claims are believed to be allowable at least for the reason of their ultimate dependency on allowable claim 1 discussed above. In addition, the '207 reference does not cure the above noted deficiencies of the primary and secondary references and fails to disclose, teach, or otherwise suggest siloxane

materials, and in particular, any combination of siloxane materials with fatty acids recited in these claims. Correspondingly, the Applicants request the withdrawal of this rejection and the allowance of these claims as well.

Regarding the other prior art documents made of record referred to by the Examiner in the "Conclusion" section, it is noted that Richmann et al. (5,200,034) does not provide any more relevant teaching than the '388 reference described above, and does not appear to impact the patentability of the present invention. Mondin et al. (5,759,983) relates to the stabilization of microemulsions as all-purpose liquid cleaning compositions for the removal of oil and grease. Thus, this reference is also not relevant to the person skilled in the art of deinking who is faced with a problem in the art of deinking specifically. Mollett et al. (5,073,234) is a divisional patent related to the discussed '754 reference (which was also a divisional). Thus, the same comments set forth above relative to the '754 are applicable.

In view of the foregoing, it is submitted that the present application is in condition for allowance and a notice to that effect is respectfully requested. However, if any issue remains after considering this response, the Examiner is invited to call the undersigned to expedite the prosecution and work out any such issue by telephone.

Respectfully submitted,



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